

A B S T R A C T

RECEIVING APPARATUS INCLUDING ADAPTIVE BEAMFORMERS

Receiving apparatus, for receiving a transmission signal in a cellular mobile communications system, comprises a main beamformer ( $6_M, 14_M$ ) which processes received signals, representing the said transmission signal, in accordance with a main beam pattern. This main beam pattern is determined by beam control information applied to the main beamformer. The main beam pattern is adjusted as necessary during use of the receiving apparatus to facilitate reception of the said transmission signal.

The apparatus also has three assistant beamformers ( $6_{A1}, 14_{A1}; 6_{A2}, 14_{A2}; 6_{A3}, 14_{A3}$ ) that, in an initial operating phase of the apparatus, process such received signals in accordance with three different assistant beam patterns. Each such pattern is determined by beam control information ( $W_{11}-W_{33}$ ) corresponding individually thereto. The three assistant beamformers produce output signals ( $O_{A1}, O_{A2}, O_{A3}$ ) corresponding respectively to the different assistant beam patterns.

A beam control information setting unit (16, 20) employs the output signals and the beam control information ( $W_{11}$  to  $W_{33}$ ) corresponding respectively to the said assistant beam patterns to make an initial estimate of the beam control information for the main beamformer.

Such receiving apparatus can permit fast setup of the initial beam control information for the main beamformer.

[Fig. 2]